

PRIDES CREEK LAKE
Pike County
2007 Supplemental Report

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EXECUTIVE SUMMARY

- A supplemental fish survey was conducted on September 19, 2007 and submersed aquatic vegetation was sampled on July 24.
- Brittle naiad was the only species collected in the vegetation survey. It was found at 2 out of 40 sites and at a rake score of 1. Filamentous algae was also observed around the lake. Emergent plants included bulrush sp., and cattail sp. Depths of vegetation collection ranged from 1.0 to 14.5 ft and the littoral zone was classified at a depth of 3.0 ft.
- A total of 916 fish, representing seven species and one hybrid, was sampled that weighed an estimated 138 lbs. Bluegill dominated the sample by number (66%), followed by largemouth bass (23%), and redear sunfish (7%). Largemouth bass ranked first by weight (76%), followed by redear sunfish (12%), and bluegill (9%). Warmouth, hybrid sunfish, black crappie, yellow bullhead, and channel catfish were also collected.
- Bluegill growth was good at all ages with age-2 and age-3 bluegill averaging 4.1 and 5.7 in. Largemouth bass growth was good at all ages with age-2 and age-3 bass averaging 9.8 and 11.9 in.
- The largemouth bass population substantially improved since 2004. The PSD more than doubled to 53 and the RSD-15 was 18. Both these numbers indicate an excellent largemouth bass fishery with many legal size bass. Also, growth is good for all ages. Therefore, Prides Creek Lake should provide excellent largemouth bass fishing for several years.
- The bluegill population's stock indices have dramatically declined since 2004, while the electrofishing catch rate more than doubled. The high catch rate was unexpected since there is no vegetation for these fish to hide in to avoid predation. The low stock indices were due to few fish over 6.0 in being collected. This may be due to the large bluegill not being in the shallows during the survey making them inaccessible to the electrofishing boat. However, even if the number of large bluegill are suppressed, the combination of good growth and large year classes of age-1 and age-2 bluegill will quickly replenish the population as they recruit to preferred sizes.
- It is recommended that annual vegetation surveys continue.

INTRODUCTION

Prides Creek Lake is an 86-acre impoundment located approximately 1.0 mi south of the Town of Petersburg in Pike County. The lake was constructed in 1968. The entire lake lies within Prides Creek Park which is a public recreation facility administered by the Pike County Park Board. The shoreline consists of a golf course, campgrounds, and a swimming beach. Outboard motors are allowed, but an idle speed is enforced. Two paved boat ramps are available for boat launching. Access fees are \$2.00 for a daily boat launching permit, \$2.00 for a daily entrance permit, \$10.00 for an annual boat launching permit, and \$15.00 for an annual entrance permit. An annual entrance permit is \$4.00 for users providing a Pike County tax receipt.

Aquatic vegetation surveys have been done annually since 1999 to evaluate the affects of triploid grass carp on the aquatic vegetation. Triploid grass carp were stocked in 1995 and 1999. In 1999, aquatic vegetation covered approximately 64% of the lake bottom and 650 triploid grass carp were stocked. In 2000, vegetation abundance decreased to 37% bottom coverage. In 2001, the lake was drawn down for most of the year, which artificially reduced the lake's aquatic vegetation. No aquatic vegetation was found in 2001, and from 2002 through 2006 vegetation was found in trace amounts.

The 2004 general survey revealed that bluegill and redear sunfish densities decreased and largemouth bass density increased due to the lack of vegetation. However, growth was good for these species.

METHODS

Submersed aquatic vegetation was sampled on July 24 from 40 randomly chosen sites throughout the littoral area using a double-sided weed rake following methods outlined by the Indiana Department of Natural Resources (2006). A supplemental fish survey was conducted on September 19, 2007. Fish collection effort consisted of pulsed DC night electrofishing with two dippers for 0.75 h. All fish collected were measured to the nearest 0.1 in TL. Average weights were estimated by using the Fish Management District 7 averages. Scales were removed from a subsample of sport fish for age and growth analysis. Proportional stock density (PSD) and relative stock density (RSD) indices were calculated for largemouth bass and bluegill (Anderson and Neumann 1996). The bluegill fishing potential index (BGFP) was used to classify the quality of the bluegill fishery (Ball and Tousignant 1996).

RESULTS

Prides Creek Lake has a maximum depth of 26.0 ft. The conductivity was 108 μ S and the water temperature was 75°F.

Brittle naiad was the only species collected in the vegetation survey. It was found at 2 out of 40 sites with a rake score of 1. Filamentous algae was also observed around the lake. Emergent plants included bulrush sp., and cattail sp. Vegetation was collected from 1.0 to 14.5 ft and the littoral zone was classified at a depth of 3.0 ft. The Secchi disk depth was 7.0 ft.

A total of 916 fish, representing seven species and one hybrid, was sampled that weighed an estimated 138 lbs. Bluegill dominated the sample by number (66%), followed by largemouth bass (23%), and redear sunfish (7%). Largemouth bass ranked first by weight (76%), followed by redear sunfish (12%), and bluegill (9%). Warmouth, hybrid sunfish, black crappie, yellow bullhead, and channel catfish were also collected.

A total of 602 bluegill was sampled that weighed 13 lbs. They ranged in length from 1.0 to 7.8 in. The bluegill electrofishing rate was 802.6/h compared to 336.0/h in 2004. Growth was good at all ages with age-2 and age-3 bluegill averaging 4.1 and 5.7 in.

The bluegill PSD substantially decreased from 23 (2004) to 1. The suggested PSD range indicating a balanced bluegill fishery is 20 to 60 (Anderson and Neumann 1996). The RSD-7 was 1 and RSD-8 was 0 compared to the 2004 values of 19 and 6. The BGFP index value decreased from 24 (2004) to 16, classifying the lake as having “fair” bluegill fishing.

A total of 214 largemouth bass was collected that weighed 105 lbs. They ranged in length from 3.8 to 20.4 in. The largemouth electrofishing rate was 285.3/h compared to 292.0/h in 2004. Growth was good at all ages with age-2 and age-3 bass averaging 9.8 and 11.9 in.

The largemouth bass PSD substantially increased from 20 (2004) to 53. The suggested PSD range indicating a balanced largemouth bass fishery is 40 to 70 (Anderson and Neumann 1996). The RSD-14 was 24 and RSD-15 was 18 compared to the 2004 values of 14 and 2.

A total of 65 redear sunfish was collected that weighed 17 lbs. They ranged in length from 2.0 to 11.7 in. The redear electrofishing rate was 86.6/h compared to 32.0/h in 2004. Growth was good with age-2 and age-3 redear averaging 6.1 and 9.0 in.

DISCUSSION

Prides Creek Lake provides excellent fishing for largemouth bass and redear sunfish. Largemouth bass grew good and were collected up to 20.4 in with 25% being at least 14.0 in. Thirty-five percent of the redear were at least 8.0 in.

The largemouth bass population substantially improved since 2004. The PSD more than doubled to 53 and the RSD-15 was 18. Both of these numbers indicate an excellent largemouth bass fishery with many legal size bass. Also, growth is good for all ages. Therefore, Prides Creek Lake should provide excellent largemouth bass fishing for several years.

The bluegill population's stock indices have dramatically declined since 2004, while the electrofishing catch rate has more than doubled. The high catch rate was unexpected since there is no vegetation for these fish to hide in to avoid predation. The low stock indices reflect the low number of fish over 6.0 in collected. This may be due to the large bluegill not being in the shallows during the survey making them inaccessible to the electrofishing boat. However, even if the number of large bluegill are suppressed, the combination of good growth and large year classes of age-1 and age-2 bluegill will quickly replenish the population as they recruit to preferred sizes.

Aquatic vegetation at Prides Creek is still sparse. Therefore, it is recommended that the annual aquatic vegetation surveys continue due to the lake's historic vegetation problems.

RECOMMENDATIONS

- Aquatic vegetation surveys should be conducted annually.

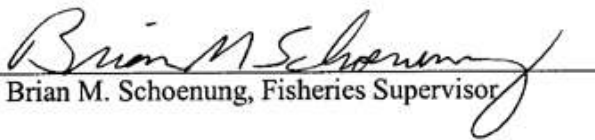
LITERATURE CITED

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- Ball, R. L. and J. N. Tousignant. 1996. The development of an objective rating system to assess bluegill fishing in lakes and ponds. Research report. Indiana Department of Natural Resources. Indianapolis. 18 pp.
- Indiana Department of Natural Resources. 2006. Tier II aquatic vegetation survey protocol. 9 pp.

Submitted by: Michelle L. Cain, Assistant Fisheries Biologist

Date: December 11, 2007

Approved by: Daniel P. Carnahan, Fisheries Biologist

Approved by: 
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Date: March 27, 2008

Appendix

Fisheries Survey Data

LAKE SURVEY REPORT			Type of Survey <input type="checkbox"/> Initial Survey <input checked="" type="checkbox"/> Re-Survey		
Lake Name Prides Creek Lake		County Pike		Date of survey (Month, day, year) September 18, 2007	
Biologist's name Michelle L. Weinman				Date of approval (Month, day, year) March 27, 2008	
LOCATION					
Quadrangle Name Petersburg		Range 8W		Section 25,26	
Township Name 1N		Nearest Town Petersburg			
ACCESSIBILITY					
State owned public access site			Privately owned public access site Single lane paved boat ramp		Other access site Single lane paved boat ramp
Surface acres 86	Maximum depth 26	Average depth 11	Acre feet 946	Water level 475	Extreme fluctuations 2.7 feet
Location of benchmark 800 feet downstream of the dam on State Road 61 (445.63MSL)					
INLETS					
Name Intermittent stream		Location North side		Origin Runoff	
Intermittent stream		East side		Runoff	
Intermittent stream		Southeast side		Runoff	
OUTLETS					
Name Prides Creek		Location South end			
Water level control Thirty inch concrete outlet with concrete riser. Vegetated emergency spillway					
POOL	ELEVATION (Feet MSL)	ACRES	Bottom type <input type="checkbox"/> Boulder <input type="checkbox"/> Gravel <input type="checkbox"/> Sand <input checked="" type="checkbox"/> Muck <input checked="" type="checkbox"/> Clay <input type="checkbox"/> Marl		
TOP OF DAM	482.5				
TOP OF FLOOD CONTROL POOL	477.7	102			
TOP OF CONSERVATION POOL	475.0	86			
TOP OF MINIMUM POOL	446.0				
STREAMBED	441.0				
Watershed use Golf course (41%), agriculture (30%), residential (15%), forested (14%)					
Development of shoreline Prides Creek Park operated by Pike County including golf course, camp sites, and swimming beach					
Previous surveys and investigations Fisheries surveys: 1972, 1973, 1974, 1979, 1984, 1993, 1997, 2001, and 2004.					
Largemouth bass spot check survey: 1986.					
Creel surveys: 1972 and 1973. Antimycin A treatment in 1973.					
Aquatic vegetation surveys in 1999 through 2006.					

SAMPLING EFFORT					
ELECTROFISHING	Day hours		Night hours		Total hours
			0.75		0.75
TRAP NETS	Number of traps		Number of Lifts		Total effort
GILL NETS	Number of nets		Number of Lifts		Total effort
ROTENONE	Gallons	ppm	Acre Feet Treated	SHORELINE SEINING	Number of 100 Foot Seine Hauls

PHYSICAL AND CHEMICAL CHARACTERISTICS			
Color		Turbidity	
		Feet	Inches (SECCHI DISK)
Alkalinity (ppm)*		pH	
Surface:	Bottom:	Surface:	Bottom:
Conductivity:		Air temperature:	
108 microsiemens		°F	
Water chemistry GPS coordinates:			
N		W	

TEMPERATURE AND DISSOLVED OXYGEN (D.O.)								
DEPTH (FEET)	Degrees (°F)	D.O. (ppm)	DEPTH (FEET)	DEGREES (°F)	D.O. (ppm)	DEPTH (FEET)	DEGREES (°F)	D.O. (ppm)
SURFACE	75.0		36			72		
2			38			74		
4			40			76		
6			42			78		
8			44			80		
10			46			82		
12			48			84		
14			50			86		
16			52			88		
18			54			90		
20			56			92		
22			58			94		
24			60			96		
26			62			98		
28			64			100		
30			66					
32			68					
34			70					

COMMENTS
Water chemistry parameters were not measured.

*ppm-parts per million

Occurrence and Abundance of Submersed Aquatic Plants

Lake: Prides Creek			
Date: 7/24/07	Littoral sites with plants: 2	Species diversity:	0.00
Littoral depth (ft): 3.0	Number of species: 1	Native diversity:	0.00
Littoral sites: 2	Maximum species/site: 1	SE mean species/site:	0.03
Total sites: 40	Mean number species/site: 0.05	Mean natives/site:	0.05
Secchi: 7.0	Mean native species/site: 0.05	SE mean natives/site:	0.03

Common Name	Frequency of	Score Frequency				Dominance
	Occurrence	0	1	3	5	
Brittle naiad	5	95	5	0	0	1

Other observed species:

Bullrush sp., cattail sp., filamentous algae

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF BLUEGILL									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0	76	12.6	0.01	0	19.0				
1.5	76	12.6	0.01	0	19.5				
2.0	76	12.6	0.01	1	20.0				
2.5	154	25.6	0.01	1	20.5				
3.0	76	12.6	0.02	1, 2	21.0				
3.5	76	12.6	0.03	1, 2	21.5				
4.0	39	6.5	0.05	1, 2	22.0				
4.5	16	2.7	0.07	2	22.5				
5.0	7	1.2	0.09	2, 3	23.0				
5.5	3	0.5	0.13	2, 3	23.5				
6.0	1	0.2	0.17	3	24.0				
6.5					24.5				
7.0					25.0				
7.5	2	0.3	0.34	4	25.5				
8.0					26.0				
8.5					TOTAL	602			
9.0									
9.5									
10.0									
10.5									
11.0									
11.5									
12.0									
12.5									
13.0									
13.5									
14.0									
14.5									
15.0									
15.5									
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									
ELECTROFISHING CATCH		802.7/h		GILL NET CATCH	N/A		TRAP NET CATCH		N/A

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF LARGEMOUTH BASS									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0	1	0.5	3.95	7
1.5					19.5				
2.0					20.0	1	0.5	4.34	8
2.5					20.5				
3.0					21.0				
3.5	1	0.5	0.03	0	21.5				
4.0	6	2.8	0.03	0, 1	22.0				
4.5	23	10.7	0.04	1	22.5				
5.0	22	10.3	0.06	1	23.0				
5.5	37	17.3	0.08	1	23.5				
6.0	10	4.7	0.10	1	24.0				
6.5	10	4.7	0.13	1	24.5				
7.0	10	4.7	0.16	1, 2	25.0				
7.5	5	2.3	0.20	1, 2	25.5				
8.0	1	0.5	0.24	2	26.0				
8.5					TOTAL	214			
9.0	1	0.5	0.33	2					
9.5	2	0.9	0.39	2					
10.0	4	1.9	0.46	2, 3					
10.5	12	5.6	0.53	2, 3					
11.0	14	6.5	0.62	2, 3					
11.5	8	3.7	0.71	3					
12.0	1	0.5	0.80	3					
12.5	9	4.2	0.91	3, 4					
13.0	6	2.8	1.02	3, 4					
13.5	10	4.7	1.15	3, 4, 5					
14.0	4	1.9	1.31	4, 5					
14.5	2	0.9	1.47	4, 5					
15.0	5	2.3	1.68	4, 5					
15.5	4	1.9	1.88	5					
16.0	1	0.5	2.08	6					
16.5	4	1.9	2.40	5, 6					
17.0									
17.5									
18.0									
18.5									
ELECTROFISHING CATCH		285.3/h		GILL NET CATCH	N/A		TRAP NET CATCH		N/A

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF REDEAR SUNFISH									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5					19.5				
2.0	3	4.6	0.01	0	20.0				
2.5	1	1.5	0.02	1	20.5				
3.0	4	6.2	0.02	1	21.0				
3.5	7	10.8	0.03	1	21.5				
4.0	9	13.8	0.05	1, 2	22.0				
4.5	4	6.2	0.07	1, 2	22.5				
5.0	3	4.6	0.09	1, 2	23.0				
5.5	5	7.7	0.13	1, 2	23.5				
6.0	3	4.6	0.17	2, 3	24.0				
6.5	1	1.5	0.22	2	24.5				
7.0					25.0				
7.5	2	3.1	0.33	2	25.5				
8.0	3	4.6	0.40	2, 3	26.0				
8.5	4	6.2	0.48	3	TOTAL	65			
9.0	9	13.8	0.57	2, 3					
9.5	3	4.6	0.66	3, 4					
10.0	2	3.1	0.66	3, 4					
10.5	1	1.5	0.87	4					
11.0									
11.5	1	1.5	1.07	5					
12.0									
12.5									
13.0									
13.5									
14.0									
14.5									
15.0									
15.5									
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									
ELECTROFISHING CATCH		86.7/h		GILL NET CATCH	N/A		TRAP NET CATCH		N/A

BLUEGILL AGE-LENGTH KEY

Length group (in)	Total number	Sub- sample	AGE			
			1	2	3	4
1.0	76	5				
1.5	76	5				
2.0	76	5	15			
2.5	154	5	154			
3.0	76	5	61	15		
3.5	76	4	38	38		
4.0	39	5	8	31		
4.5	16	5		16		
5.0	7	5		6	1	
5.5	3	3		2	1	
6.0	1	1			1	
6.5						
7.0						
7.5	2	2				2
8.0						
Totals	602	50	276	108	3	2

AGE-LENGTH KEY SUMMARY						
Age	Number	Mean		SE	Lower 95%CI	Upper 95%CI
		TL	Var			
1	276	3.0	0.20	0.03	3.0	3.1
2	108	4.1	0.34	0.06	4.0	4.2
3	3	5.7	0.25	0.27	5.2	6.2
4	2	7.8	0.00	0.00	7.8	7.8

LARGEMOUTH BASS AGE-LENGTH KEY

Length group (in)	Total number	Sub- sample	AGE							
			1	2	3	4	5	6	7	8
3.5	1	1								
4.0	6	5	4							
4.5	23	5	23							
5.0	22	6	22							
5.5	37	6	37							
6.0	10	5	10							
6.5	10	7	10							
7.0	10	6	5	5						
7.5	5	5	3	2						
8.0	1	1		1						
8.5										
9.0	1	1		1						
9.5	2	2		2						
10.0	4	3		3	1					
10.5	12	5		10	2					
11.0	14	6		7	7					
11.5	8	4			8					
12.0	1	1			1					
12.5	9	7			5	4				
13.0	6	5			2	4				
13.5	10	9			1	7	2			
14.0	4	4				2	2			
14.5	2	2				1	1			
15.0	5	5				2	3			
15.5	4	3					4			
16.0	1	1						1		
16.5	4	4					1	3		
17.0										
17.5										
18.0										
18.5										
19.0	1	1							1	
19.5										
20.0	1	1								1
Totals	169	70	114	30	28	19	13	4	1	1

AGE-LENGTH KEY SUMMARY						
Age	Number	Mean	Var	SE	Lower 95%CI	Upper 95%CI
		TL				
1	114	5.7	0.63	0.07	5.5	5.8
2	30	9.8	2.31	0.28	9.3	10.4
3	28	11.9	0.80	0.17	11.5	12.2
4	19	13.7	0.59	0.18	13.4	14.1
5	13	15.1	0.83	0.25	14.6	15.6
6	4	16.6	0.06	0.13	16.4	16.9
7	1	19.3				
8	1	20.3				

REDEAR SUNFISH AGE-LENGTH KEY

Length group (in)	Total number	Sub- sample	AGE				
			1	2	3	4	5
2.0	3	3					
2.5	1	1	1				
3.0	4	3	4				
3.5	7	7	7				
4.0	9	5	5	4			
4.5	4	4	1	3			
5.0	3	2	2	2			
5.5	5	4	1	4			
6.0	3	3		2	1		
6.5	1	1		1			
7.0							
7.5	2	2		2			
8.0	3	3		1	2		
8.5	4	4			4		
9.0	9	8		2	7		
9.5	3	3			2	1	
10.0	2	2			1	1	
10.5	1	1				1	
11.0							
11.5	1	1					1
Totals	64	56	21	20	17	3	1

AGE-LENGTH KEY SUMMARY						
Age	Number	Mean			Lower 95%CI	Upper 95%CI
		TL	Var	SE		
1	21	4.0	0.56	0.16	3.7	4.3
2	20	6.1	2.73	0.37	5.4	6.8
3	17	9.0	0.76	0.21	8.5	9.4
4	3	10.3	0.25	0.29	9.7	10.8
5	1	11.8				

GPS LOCATION OF SAMPLING EQUIPMENT								
GILL NETS			TRAP NETS			ELECTROFISHING		
1	N	W	1	N	W	1	N 38.487840	W -87.258689
2	N	W	2	N	W		N 38.487024	W -87.260583
3	N	W	3	N	W	2	N 38.487024	W -87.260583
4	N	W	4	N	W		N 38.486385	W -87.265518
5	N	W	5	N	W	3	N 38.485181	W -87.266094
6	N	W	6	N	W		N 38.482345	W -87.262832
7	N	W	7	N	W	4	N	W
8	N	W	8	N	W		N	W
9	N	W	9	N	W	5	N	W
10	N	W	10	N	W		N	W
11	N	W	11	N	W	6	N	W
12	N	W	12	N	W		N	W
13	N	W	13	N	W	7	N	W
14	N	W	14	N	W		N	W
15	N	W	15	N	W	8	N	W
16	N	W	16	N	W		N	W
17	N	W	17	N	W	9	N	W
18	N	W	18	N	W		N	W
19	N	W	19	N	W	10	N	W
20	N	W	20	N	W		N	W
						11	N	W
							N	W
						12	N	W
							N	W
						13	N	W
							N	W
						14	N	W
							N	W
						15	N	W
							N	W
						16	N	W
							N	W
						17	N	W
							N	W
						18	N	W
							N	W
						19	N	W
							N	W
						20	N	W
							N	W